### TERRA LANA WOOL INSULATION PRODUCT DATA

Product Table
Skillion Ceiling data sheet
Truss Ceiling data sheet
Timber I-Beam Fillet data sheet
Exterior Wall data sheet
Service Cavity data sheet
Drop In Floor data sheet
Underfloor data sheet
Chatterblock Acoustic data sheet
Acoustic specifications



### PRODUCT TABLE TERRA LANA WOOL INSULATION

All products are available in customised widths, lengths and R-values for orders over 50m<sup>2</sup>

R-VALUE	THICKNESS	CENTRES	BALE CONTAINS	M²/BALE	CODE
CEILING SERVICE CAV	ITY				
R0.9	35mm	600mm	2 x 6m x 570mm	6.84 m <sup>2</sup>	09.35.570
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m <sup>2</sup>	12.45.570
R2.4	90mm	600mm	10 x 1.2m x 560mm	6.72 m <sup>2</sup>	24.90.560
KILLION ROOF - Can	also be used in Truss	roof			
R3.6	140mm	600mm	8 x 1.2m x 560mm	5.38 m <sup>2</sup>	36.140.560
R5.0	190mm	600mm	5 x 1.2m x 570mm	3.42 m <sup>2</sup>	50.190.570
R6.4	240mm	600mm	4 x 1.2m x 570mm	2.74 m <sup>2</sup>	64.240.570
R7.2	290mm	600mm	4 x 1.2m x 570mm	2.74 m <sup>2</sup>	72.290.570
TIMBER I-BEAM RAFTE	R 'FILLET' – Custom	fillets available for all hy	JOIST and Lumberworx I-Be	eams – see our website	9
R0.9	35mm	200mm hyJOIST	8 x 6m x 120mm	48 lm/bale	09.35.120F
R0.9	35mm	240mm hyJOIST	7 x 6m x 160mm	42 lm/bale	09.35.160F
TRUSS ROOF					
R3.6	180mm	900mm	10 x 1.2m x 435mm	5.22 m <sup>2</sup>	36.180.435
R4.0	190mm	900mm	10 x 1.2m x 435mm	5.22 m <sup>2</sup>	40.190.435
RUSS ROOF DOUBLE	LAYER				
R5.2 (R2.6 + R2.6)	290 mm	900mm	12 x 1.2m x 435mm	3.13 m <sup>2</sup>	26.145.435
R6.4 (R3.2 + R3.2)	330 mm	900mm	10 x 1.2m x 435mm	2.61 m <sup>2</sup>	32.165.435
R7.2 (R3.6 + R3.6)	360mm	900mm	10 x 1.2m x 435mm	2.61 m <sup>2</sup>	36.180.435
R8.0 (R4.0 + R4.0)	380mm	900mm	10 x 1.2m x 435mm	2.61 m <sup>2</sup>	40.190.435
WALL SERVICE CAVITY	,				
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m <sup>2</sup>	12.45.570
00mm WALL					
R2.4	90mm	400mm	10 x 1.2m x 360mm	4.32 m <sup>2</sup>	24.90.360
R2.4	90mm	600mm	10 x 1.2m x 560mm	6.72 m <sup>2</sup>	24.90.560
40mm WALL					
R3.2	140mm	400mm	10 x 1.2m x 360mm	4.32 m <sup>2</sup>	32.140.360
R3.2	140mm	600mm	10 x 1.2m x 560mm	6.72 m <sup>2</sup>	32.140.560
R3.6	140mm	400mm	10 x 1.2m x 360mm	4.32 m <sup>2</sup>	36.140.360
R3.6	140mm	600mm	8 x 1.2m x 560mm	5.38 m <sup>2</sup>	36.140.560
CHATTERBLOCK ACO	<b>JSTIC</b> – For internal v	valls and midfloor			
R1.4	60mm	600mm	12 x 1.2m x 560mm	8.06 m <sup>2</sup>	CB.60.560
R2.2	90mm	600mm	12 x 1.2m x 560mm	8.06 m <sup>2</sup>	CB.90.560
R3.2	140mm	600mm	10 x 1.2m x 560mm	6.72 m²	CB.140.560
RETRO-FIT UNDERFLO	OOR – Stapled in from	underneath			
R2.0	115mm	450mm	2 x 5.6m x 480mm	5.38 m <sup>2</sup>	20.115.480
NEW BUILD DROP-IN I	JNDERFLOOR – Insta	all from above with propr	ietry fastening system, prior	to sheet flooring	
R2.7	110mm	400mm	8 x 1.2m x 365mm	3.50 m <sup>2</sup>	DIF.110.365
R3.2	140mm	400mm	8 x 1.2m x 365mm	3.50 m <sup>2</sup>	DIF.140.365

- Products must be removed from packaging within 3 months to ensure full loft recovery Orders of 4 bales or less are subject to additional freight charges.

- Orders of 4 bates or tests are subject to additional freight charges.

  Prices are FIS excluding GST; site delivery not included unless otherwise stated.

  Please allow up to 2-3 weeks from order placement to delivery. Minimum order quantities may apply.

  Returns Policy: Returned products must be returned to our Christchurch Factory in original unopened packaging, within 1 month of the purchase date; The customer is responsible for the freight on all returns; Custom made products are non-refundable; a 20% restocking fee is charged against the gross value of the returned products less freight (ex factory cost).











### SKILLION ROOF WOOL INSULATION

#### **PRODUCT DATA**



The benefits of Terra Lana wool's superior performance designed for Skillion ceilings

#### **APPLICATIONS**

- Skillion roof (Truss roof or external walls where applicable)
- New and retrofit
- Residential and commercial buildings

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- 100% recyclable (by Terra Lana)
- · Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Manages moisture, maintaining thermal performance
- Excellent acoustic barrier qualities.

#### **DESCRIPTION**

Terra Lana harnesses all the benefits of wool's unique insulative qualities combined with innovative design for a truly high-performance skillion roof insulation. We use natural and recycled materials and manufacture locally to modern sustainability standards.

#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty

#### **SPEC ASSIST**

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing

Contact: spec@terralana.co.nz



R-VALUE	THICKNESS	CENTRES	BALE CONTAINS	M² PER BALE	CODE			
CEILING SERVICE CAVITY INSULATION								
R0.9	35mm	600mm	2 x 6m x 570mm	6.84 m²	09.35.570			
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m²	12.45.570			
R2.4	90mm	600mm	10 x 1.2m x 560mm	6.72 m²	24.90.560			
SKILLION ROOF INSULATION								
R3.6	140mm	600mm	8 x 1.2m x 560mm	5.38 m <sup>2</sup>	36.140.560			
R5.0	190mm	600mm	5 x 1.2m x 570mm	3.42 m²	50.190.570			
R6.4	240mm	600mm	4 x 1.2m x 570mm	2.74 m²	64.240.570			
R7.2	290mm	600mm	4 x 1.2m x 570mm	2.74 m <sup>2</sup>	72.290.570			









## TRUSS ROOF WOOL INSULATION

#### PRODUCT DATA



The benefits of Terra Lana wool's superior performance designed for Truss roof ceilings

#### **APPLICATIONS**

- Truss roof (Skillion roof or external walls where applicable)
- New and retrofit
- Residential and commercial buildings

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- 100% recyclable (by Terra Lana)
- · Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Manages moisture, maintaining thermal performance
- Excellent acoustic barrier qualities.

#### **DESCRIPTION**

SPECIFICATIONS

Terra Lana harnesses all the benefits of wool's unique insulative qualities combined with innovative design for a truly high-performance truss roof insulation. We use natural and recycled materials and manufacture locally to modern sustainability standards.

#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty

#### **SPEC ASSIST**

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing

Contact: spec@terralana.co.nz



SILCHICATIONS								
R-VALUE	THICKNESS	CENTRES	BALE CONTAINS	M² PER BALE	CODE			
CEILING SERVICE CA	AVITY INSULATION							
R0.9	35mm	600mm	2 x 6m x 570mm	6.84 m²	09.35.570			
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m <sup>2</sup>	12.45.570			
R2.4	90mm	600mm	10 x 1.2m x 560mm	6.72 m <sup>2</sup>	24.90.560			
TRUSS ROOF INSULATION								
R3.6	180mm	900mm	10 x 1.2m x 435mm	5.22 m <sup>2</sup>	36.180.435			
R4.0	190mm	900mm	10 x 1.2m x 435mm	5.22 m <sup>2</sup>	40.190.435			
TRUSS ROOF DOUB	TRUSS ROOF DOUBLE LAYER INSULATION							
R5.2 (R2.6 + R2.6)	290mm	900mm	12 x 1.2m x 435mm	3.13 m <sup>2</sup>	26.145.435			
R6.4 (R3.2 + R3.2)	330mm	900mm	10 x 1.2m x 435mm	2.61 m <sup>2</sup>	32.165.435			
R7.2 (R3.6 + R3.6)	360mm	900mm	10 x 1.2m x 435mm	2.61 m <sup>2</sup>	36.180.435			
R8.0 (R4.0 + R4.0)	380mm	900mm	10 x 1.2m x 435mm	2.61 m <sup>2</sup>	40.190.435			

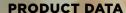








## TIMBER I-BEAM FILLET WOOL INSULATION





The natural benefits of Terra Lana wool for optimal insulation of timber I-Beam systems

**DESCRIPTION** 

span capacity.

Note

thermal performance.

#### **APPLICATIONS**

- hyJOIST rafters/joists
- Lumberworx rafters/joists

#### **FEATURES**

- The only specific solution available for timber I-Beams
- Maximises thermal performance of timber I-Beams
- Custom made to fit all timber I-Beam sizes
- Easy to install, manufactured to friction fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- 100% recyclable (by Terra Lana)

#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD. (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty
- H1 COMPLIANT. Designed to meet/exceed

#### **SPEC ASSIST** – Contact: <a href="mailto:spec@terralana.co.nz">spec@terralana.co.nz</a>

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing



Manufacturer	I-Beam Size	Fillet Size
hyJOIST	200mm	120mm
hyJOIST	240mm	160mm
hyJOIST*	300mm	220mm
Lumberworx*	200mm	140mm
Lumberworx*	240mm	180mm
Lumberworx*	300mm	240mm

FILLET

Timber I-Beams are often specified over standard solid timber framing to reduce thermal bridging and increase

I-Beam's create voids that are difficult to insulate using

standard insulation products. Terra Lana timber I-Beam

fillets friction-fit within the voids to ensure maximum

When specifying vapour control layers, such as Pro Clima Intello,

directly beneath rafters, consider spacing rafters at 600mm centres max. This will ensure the insulation can friction fit and

be stapled to the edge of the rafter, without applying excessive

pressure on the vapour control layer, or falling out of the cavity.

R-VALUE	BATTEN	JOIST SIZE	SIZE IN BALE	M <sup>2</sup> PER BALE	CODE
R0.9	35mm	200mm hyJOIST	8 x 6m x 120mm	48 lm/bale	09.35.120F
R0.9	35mm	240mm hyJOIST	7 x 6m x 160mm	42 lm/bale	09.35.160F

<sup>\*</sup> Other product fillets made to order—specify by fillet size, as per table above











## EXTERIOR WALL WOOL INSULATION

#### PRODUCT DATA



The natural benefits of Terra Lana Wool designed for optimal exterior wall insulation

#### **APPLICATIONS**

- External stud walls (& ceilings where applicable)
- New and retrofit
- Residential and commercial buildings

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- 100% recyclable (by Terra Lana)
- Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Manages moisture, maintaining thermal performance
- Excellent acoustic barrier qualities

#### **DESCRIPTION**

Terra Lana Wool Wall Insulation is designed with rigidity to friction fit within exterior wall cavities and not slump or degrade over the life of the building.

#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD. (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty
- H1 COMPLIANT. Designed to meet/exceed

#### **SPEC ASSIST** – Contact: <a href="mailto:spec@terralana.co.nz">spec@terralana.co.nz</a>

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing



R-VALUE	THICKNESS	CENTRES	BALE CONTAINS	M² PER BALE	CODE
WALL SERVICE CAVIT	TY				
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m <sup>2</sup>	12.45.570
90MM WALL					
R2.4	90mm	400mm	10 x 1.2m x 360mm	4.32 m <sup>2</sup>	24.90.360
R2.4	90mm	600mm	10 x 1.2m x 560mm	6.72 m <sup>2</sup>	24.90.560
140MM WALL					
R3.2	140mm	400mm	10 x 1.2m x 360mm	4.32 m <sup>2</sup>	32.140.360
R3.2	140mm	600mm	10 x 1.2m x 560mm	6.72 m <sup>2</sup>	32.140.560
R3.6	140mm	400mm	10 x 1.2m x 360mm	4.32 m <sup>2</sup>	36.140.360
R3.6	140mm	600mm	8 x 1.2m x 560mm	5.38 m <sup>2</sup>	36.140.560

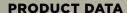








# SERVICE CAVITY WOOL INSULATION





The natural benefits of Terra Lana Wool Insulation designed to fill service cavities

#### **APPLICATIONS**

- All ceiling and wall service cavities
- New and retrofit
- Residential and commercial buildings

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Excellent acoustic barrier qualities

#### **DESCRIPTION**

Terra Lana service cavity insulation is designed to fill service cavity spaces adding R-Value to the thermal envelope, while still allowing the passage of wiring and plumbing services.

#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty

#### **SPEC ASSIST**

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing

Contact: spec@terralana.co.nz



R-VALUE	THICKNESS	CENTRES	DENSITY	M² PER BALE	CODE			
CEILING SERVICE CAVITY INSULATION								
R0.9	35mm	600mm	2 x 6m x 570mm	6.84 m²	09.35.570			
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m²	12.45.570			
R2.4	90mm	600mm	10 x 1.2m x 560mm	6.72 m²	24.90.560			
WALL SERVICE CAVITY INSULATION								
R1.2	45mm	600mm	2 x 5m x 570mm	5.70 m <sup>2</sup>	12.45.570			









## NEW BUILD DROP IN FLOOR WOOL INSULATION



#### PRODUCT DATA

The natural benefits of Terra Lana Wool insulation designed for new suspended floors

#### **APPLICATIONS**

- New lined and unlined timber suspended floors
- Retrofit, installed from above
- Non-enclosed or enclosed perimeter foundation floors
- Residential and commercial buildings

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Proprietory installation system
- Excellent acoustic barrier qualities

#### **DESCRIPTION**

Designed to be installed from above prior to sheet flooring, held by friction fit and Terra Lana's proprietory cradle-strap fastening system.

Terra Lana Drop In Floor Insulation is dense, semi-rigid and highly resistant to slumping, creating a wind-proof layer that fills the underfloor voids leaving no gaps.

The wool component provides optimal thermal insulation, while also transmitting moisture away from the building and remaining effective even in damp underfloor conditions.

Terra Lana is locally manufactured from predominantly natural and recycled materials and is safe and easy to handle, providing an overall product solution to meet modern environmental compliance demands.

#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty

#### **SPEC ASSIST**

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing

Contact: spec@terralana.co.nz



#### **SPECIFICATIONS**

	R-VALUE	THICKNESS	CENTRES	BALE CONTAINS	M² PER BALE	CODE
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NEW BUILD DROP IN UNDERFLOOR - Install from above with proprietry fastening system, prior to sheet flooring

R2.7	110mm	400mm	8 x 1.2m x 365mm	3.50 m²	DIF.110.365
R3.2	140mm	400mm	8 x 1.2m x 365mm	3.50 m <sup>2</sup>	DIF.140.365

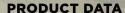








## RETROFIT UNDERFLOOR WOOL INSULATION





The superior natural benefits of Terra Lana Wool insulation designed for underfloors

#### **APPLICATIONS**

- Suspended floors, installed from the underside where there is a minimum 350mm clearance between the bearer and ground.
- Retrofit under existing floors only
- Residential and commercial buildings

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- 100% recyclable (by Terra Lana)
- Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Manages moisture, maintaining thermal performance
- Excellent acoustic barrier qualities

#### COMPLIANCE

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty

#### **SPEC ASSIST**

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing

Contact: <a href="mailto:spec@terralana.co.nz">spec@terralana.co.nz</a>

#### **DESCRIPTION**

Designed to fill existing underfloor cavities with a durable, semi-rigid, high performance wool composition that is easy to install. The rigid structure prevents sagging, air movement and heat loss through gaps. The wool component transmits moisture vapour away from the building and maintains effectiness in humid or damp conditions.



#### **SPECIFICATIONS**

R-VALUE THICKNESS CENTRES BALE CONTAINS M² PER BALE CODE

UNDERFLOOR INSULATION

R2.0 115mm 450mm 2 x 5.6m x 480mm 5.38 m<sup>2</sup> 20.115.480









The benefits of Terra Lana wool's premium performance designed to block out noise

#### **APPLICATIONS**

- Inter-tenancy walls and floors including GIB Systems (see next page)
- Residential and commercial buildings
- Internal walls & midfloors between living areas.

#### **FEATURES**

- Designed to not slump or lose loft
- Superior insulative performance
- 100% recyclable (by Terra Lana)
- Easy to install, manufactured to fit
- Environmentally responsible product
- Naturally safe to handle & healthy in the home
- Manages moisture, maintaining thermal performance
- Excellent acoustic barrier qualities

#### **DESCRIPTION**

Terra Lana Chatterblock® leverages on wool's outstanding sound absording qualities. The semi-rigid construction is specifically formulated with a high density of at least 18kg/m³, giving a high flow resistance suitable for a wide range of specialised sound control.

Chatterblock® is locally manufactured from sheep wool from Canterbury farms and is safe to handle and easy to friction fit install, providing a solution that meets modern acoustic and environmental compliance standards.

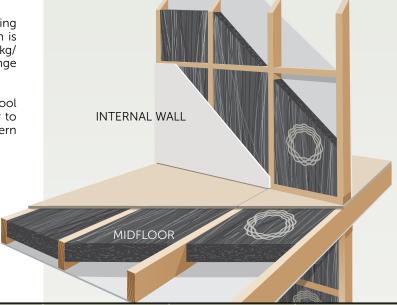
#### **COMPLIANCE**

- BRANZ APPRAISED. Appraisal 682 [2022]
- DECLARE RED LIST FREE. Certified toxin free
- GREENGUARD. Indoor air quality test approved
- HOMESTAR/GREENSTAR. Credits available
- EPD (in process for mid 2024 completion)
- QUALITY ASSURANCE. 50 year warranty

#### **SPEC ASSIST**

- Masterspec
- Smart Spec
- Design Navigator
- H1 Reports & spec writing

Contact: spec@terralana.co.nz



R-VALUE	THICKNESS	CENTRES	DENSITY	M² PER BALE	CODE		
CHATTERBLOCK® ACOUSTIC INSULATION – For internal walls and midfloors							
R1.4	60mm	600mm	46.7 kg/m³	8.06 m²	CB.60.560		
R2.2	90mm	600mm	21.8 kg/m³	8.06 m²	CB.90.560		
R3.2	140mm	600mm	18.2 kg/m³	6.72 m²	CB.140.560		









#### GIB SYSTEM SOUND TRANSMISSION CLASS PRODUCT SPECIFICATIONS

GIB SPECIFICATION	STC*	GIB SPECIFICATION	STC*	
Central barrier walls		Steel frame walls — GIB Rail and acoustic resilient mount		
Timber frame walls – with GIB Barrierl	ine central barrier	GBSA 30r	55	
GBTLAB 60a	68	GBSA 60r	55	
GBTLAB 60b	64	GBSA 90r	57	
GBTLAB 60c	67	GBSIC 45a	55	
GBTLAB 60d	61	Staggered steel stud walls		
Steel frame walls – with GIB Barrierlin	e central barrier	GBSA 30s	55	
GBSAB 60a	63	GBSA 90s	60	
GBSAB 60b	67	GIB Rondo Quiet Stud		
GBSAB 60c	68	GBQSA 45	56	
Staggered stud steel frame walls — with 13mm GIB Fyreline central barrier		GBQSA 60a	55	
		GBQSA 90	58	
GBSAB 60d	56	Floor/ceiling and suspended grid		
GBSAB 60e	57	Floor/ceiling systems		
Double frame walls		GBDFA 60b	57	
Double timber frame walls		GBDFA 60d	67	
GBTLA 30a	56	GBDFA 60e	65	
GBTLA 30b	56	GBSJA 45	55	
GBTLA 60	58	GBSJA 60	56	
GBTLA 90c	60	Suspended grid systems		
GBTLA 90d	64	GBSCA 45	56	
Double steel frame walls		GBSCA 60a	56	
GBSA 30b	54			
GBSA 60c	58			
GBSA 45	59			
GBSA 90c	60			
GBSA 90d	64			
GBTLA 90r	55			
GBTLIC 45	61			
GBTLIC 60	62	*Sound Transmission Class		
GBTLIC 60a	57	the rating for how well a partition tenu numbers denote a greater reduction of		









